

Who drives change? Comparing the evolution of domestic climate governance in India and South Africa

Never, Babette

Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

Zur Verfügung gestellt in Kooperation mit / provided in cooperation with:
GIGA German Institute of Global and Area Studies

Dieser Beitrag ist mit Zustimmung des Rechteinhabers aufgrund einer (DFG geförderten) Allianz- bzw. Nationallizenz frei zugänglich. / This publication is with permission of the rights owner freely accessible due to an Alliance licence and a national licence (funded by the DFG, German Research Foundation) respectively.

Empfohlene Zitierung / Suggested Citation:

Never, B. (2012). Who drives change? Comparing the evolution of domestic climate governance in India and South Africa. *The Journal of Environment & Development*, 21(3), 362-387. <https://doi.org/10.1177/1070496512449821>

Nutzungsbedingungen:

Dieser Text wird unter einer Deposit-Lizenz (Keine Weiterverbreitung - keine Bearbeitung) zur Verfügung gestellt. Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

gesis
Leibniz-Institut
für Sozialwissenschaften

Terms of use:

This document is made available under Deposit Licence (No Redistribution - no modifications). We grant a non-exclusive, non-transferable, individual and limited right to using this document. This document is solely intended for your personal, non-commercial use. All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

Mitglied der

Leibniz-Gemeinschaft

The Journal of Environment & Development

<http://jed.sagepub.com/>

Who Drives Change? Comparing the Evolution of Domestic Climate Governance in India and South Africa

Babette Never

The Journal of Environment Development 2012 21: 362 originally published online 12 June 2012

DOI: 10.1177/1070496512449821

The online version of this article can be found at:

<http://jed.sagepub.com/content/21/3/362>

Published by:



<http://www.sagepublications.com>

Additional services and information for *The Journal of Environment & Development* can be found at:

Email Alerts: <http://jed.sagepub.com/cgi/alerts>

Subscriptions: <http://jed.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://jed.sagepub.com/content/21/3/362.refs.html>

>> [Version of Record](#) - Aug 16, 2012

[OnlineFirst Version of Record](#) - Jun 12, 2012

[What is This?](#)

Who Drives Change? Comparing the Evolution of Domestic Climate Governance in India and South Africa

Journal of Environment & Development
21(3) 362–387
© 2012 SAGE Publications
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1070496512449821
<http://jed.sagepub.com>



Babette Never¹

Abstract

This article compares and contrasts the nature and scope of change in the domestic climate governance of India and South Africa between 2007 and 2010. It identifies the actors and networks driving these change processes by applying the concepts of “communities of practice” and a simple, resource exchange–based network. Small communities of practice promoting collective learning, trust, and identity building capture the trends and actor relations well for the South African case. More simple, business-driven networks could be identified in India. Using survey and interview data, this article finds that both countries have generally not undergone a structural, transformative change, yet that includes the collective learning of new norms and values. Differences exist for more specific parts of climate governance. The number of participating actors, the character of the scientific landscape, and the centrality of a governmental actor with a certain knowledge and attitude within a network shape these different change processes.

Keywords

climate change, governance, communities of practice, networks, India, South Africa

Introduction

It is widely recognized that a change towards low-carbon development is required for an effective governance of climate change. This presents a special challenge for the

¹German Institute of Global and Area Studies (GIGA) and University of Hamburg, Hamburg, Germany

Corresponding Author:

Babette Never, German Institute of Global and Area Studies (GIGA) and University of Hamburg, Neuer Jungfernstieg 21, 20354 Hamburg, Germany
Email: never@giga-hamburg.de

so-called BASIC countries—Brazil, India, South Africa and China—that have received a lot of attention during the last rounds of the international climate change negotiations. These emerging economies are not only gaining weight in the international political system but also have a growing impact on ecosystems while they struggle to sustain economic growth and development. This article focuses on the actors and driving forces of change at the domestic level of climate governance in India and South Africa.

As international progress remains slow, networks play an increasingly important role in the evolution of climate governance on various levels. They are important for enhancing adaptive capacity and local communities' resilience, for instance, and for decreasing societies' vulnerability to the impacts of climate change (e.g., Adger, Arnell, & Tompkins, 2005; Folke, Hahn, Olsson & Norberg, 2005). The connection between networks, learning, and change is promising for climate governance, as contributions by natural resource management have shown (Armitage, 2008; Olsson et al., 2006; Pahl-Wostl, 2009). Constructivist approaches focusing on ideas, norms, and knowledge make this connection stronger as well (Broadbent, 2010), for example by analyzing the role of knowledge brokers (Ascher, Steelman, & Healy, 2010).

For practitioners, the identification of relevant actors, their power, relationships, knowledge, and attitudes supports the targeting of capacity building. Understanding the underlying background and the functioning of (in)formal domestic governance systems enables better outcomes of climate programs promoting low-carbon development.

Comparative, comprehensive assessments of the nature of change in *domestic* climate governance in the BASIC countries and other major carbon emitters among developing countries—and an analysis of the actors behind it—are rare. This is particularly true for India and South Africa. Here, existing research focuses on International Relations questions, equity, and the Clean Development Mechanism (Benecke, 2009; Hallding et al., 2011; Michaelowa & Michaelowa, 2011; Rajan, 1997; Stevenson, 2011; Vihma, 2011), discusses emission trajectories and possibilities for mitigation (e.g., Goldblatt, 2010), or provides case studies of local adaptation practices (Roberts, 2010). More encompassing assessments of overall climate governance do not sufficiently take into account the networks between various actor groups (Dubash, 2009; Koch, Vogel, & Patel, 2007; Rajamani, 2009).

Dubash (2009) and Rajamani (2009) identify three major actor groups in Indian domestic climate policy: "Growth first stonewallers" promote the traditional foreign policy position that climate change has to be dealt with by the North only (Dubash, 2009, p. 9). Progressive realists and progressive internationalists support cobeneficial approaches and recognize that India needs to act domestically. The former propose to delink domestic and global positions and actions (keeping the hard-line position internationally); the latter want to link them progressively (Dubash, 2009, p. 9). Although the authors shed light on the attitudes of these actor types in a helpful way, individual network-type relationships and the potential role of learning do not come into focus. In a similar fashion, Hallding et al. (2011) provide useful indications of individual actor relations at the domestic level, particularly on South Africa. But their main

purpose remains a comparative foreign policy analysis of the BASIC. Domestic change processes are thus not fully understood yet.

The aim of this article, then, is to close an empirical research gap concerning domestic change processes. The empirical data will be connected to current theoretical trends. The concept of “communities of practice” (Adler, 2005, 2008) versus a basic version of social network analysis will be given an exploratory test of fit. Depending on which concept better captures what is going on in India and South Africa, the practical support of climate governance can be better directed. This article asks three subsequent questions: Has a change in domestic climate governance taken place in India and South Africa? If so, how far-reaching is it? And, finally, who drives this change?

The article is structured into five sections. The first section presents the theoretical framework by briefly outlining the approach of communities of practice based on Adler (2005, 2008) and contrasting it with formal network analysis. I thus take an actor-centered approach, concentrating on period between 2007 and 2010. Since the publication of the Intergovernmental Panel on Climate Change’s (IPCC) *Fourth Assessment Report* in early 2007 (IPCC, 2007) a general, renewed political momentum can be observed. The second section explains the mixed-methods approach. A series of semistructured interviews and the results of an expert survey build the foundations for empirical analysis. The third and fourth sections present the empirical results. Here, the former focuses on the existence and nature of change in both countries’ domestic climate governance and the latter analyzes the actors and actor groups that drive these processes. The concluding section discusses the results’ implications for research and practice.

Some Background

As members of the BASIC group, India and South Africa share certain climate change–related characteristics, but they also differ somewhat in their socioeconomic background. First, the size of the population is very different. India has approximately 1.3 billion inhabitants, whereas South Africa has a population of 50 million people. Their overall level of development is similarly low, captured by the Human Development Index (HDI). South Africa ranked 110th and India 119th of 169 countries captured in the HDI 2010.¹ The income is less equally distributed in South Africa than in India: South Africa’s income Gini coefficient for 2010 was at 57.8 and India’s at 36.8 (0 = total equality, 100 = total inequality). However, India’s economy is much larger than South Africa’s economy and it grows at a much higher rate of 8% on average in the past 5 years (compared to 3% in South Africa).² In 2010, South Africa’s gross domestic product per capita was at 10,140 U.S. dollar (purchasing power parity [PPP]) and India’s at 3,354 U.S. dollar (PPP). In the World Bank classification, South Africa therefore belongs to the group of higher-middle-income countries and India to the lower-middle-income countries.³

India’s total greenhouse gas (GHG) emissions are among the highest of the world, but its per capita emissions are low. To counter poverty, India needs to sustain an

economic growth of around 9% over the next 20 years, which would increase the primary energy supply needs 4 to 5 times and electricity generation 6 to 7 times compared to 2004.⁴ Since the Indian economy is largely based on electricity produced from coal of low quality, GHG emissions will increase rapidly. Currently, 69% of electricity is generated from coal; the rest is a mix of oil, nuclear, and renewable energy sources.⁵ India already has 20 nuclear plants and plans to build more, whereas South Africa has only one thus far. Electricity generation accounts for the bulk of India's emissions (38%) followed by the iron, steel, and cement industries (22%) and agriculture (18%). Projections of per capita emissions in 2031 range from 2.77 to 5 tons CO₂e (currently at an average of 1.4 tons) and total emissions of 4 to 7 billion tons CO₂e, which would be a three- to four-fold increase.⁶ The projected impacts of climate change vary according to the different climatic zones of the Indian subcontinent. Changes in monsoon patterns, impacts on water resources (including the Himalaya glaciers), and agriculture, as well as the increase in extreme weather events and sea-level rise, are likely to be the most severe impacts (Indian Network of Climate Change Assessment [INCCA], 2010).

South Africa's GHG emissions in total are lower than India's, but per capita emissions are well in the ranks of an industrialized country. The emission profile is strongly linked to South Africa's economic structure and electricity generation from coal. While the coal in South Africa has higher quality than in India, 85% of electricity is generated from it (Department of Environmental Affairs, 2011). Generally, electricity in South Africa is cheap and industry, therefore, is very energy- and emission-intensive. In 2000, South Africa's national net GHG emissions were at 415 million tons CO₂ eq (*Long-Term Mitigation Scenarios [LTMS]*, 2008): 78% come from energy (fuel combustion, also in the industries and fugitive fuels); 14% from industrial processes; 6% from agriculture, land use, and forestry; and 2% from Waste. Projections see emissions increasing up to approximately 1.5 billion tons of CO₂ eq till 2050 if the development plans of 2007 would be kept unchanged (*LTMS*, 2008). The sectors with the highest vulnerability to the impacts of climate change are most likely to be water, biodiversity, agriculture, health, and some coastal areas that will be affected by rise in sea level, flooding, and change of currents (Akoon et al., 2010).

Theoretical Framework: From Networks to Communities of Practice

Communities of Practice and Cognitive Evolution

This section introduces Emmanuel Adler's (2005, 2008) cognitive evolution approach and its central category "communities of practice." Drawing on Etienne Wenger (1998), Adler provides a practice-oriented, communitarian view on political change. Communities of practice are informal networks whose members are not only bound by the exchange of information but by a sense of joint enterprise or a common identity. The identity slowly develops through members' engagement with each other.

Essentially, communities of practice are learning networks that develop and share new ideas, knowledge, and practices. Even though Adler does not use the term “trust” explicitly, members’ relationships are characterized by it. Trust develops between individual members and as a group characteristic. Members of communities of practice can have diverse professional backgrounds and cross-cut organizational and geographical boundaries.

The function of communities of practice does not end with learning within the community. It also matters what they actually, practically do and achieve. Through the process of cognitive evolution, they are important for changing the dominant political mindset and the background knowledge that actors refer to (Adler, 2005, 2008). This background knowledge frames action. Cognitive evolution means the process of collective, social learning through which communities of practice expand their influence and induce change. It also describes how communities of practice get established and how the new background knowledge that they produce (the shared ideas, knowledge, and practices) becomes institutionalized. This, in turn, changes social structures and the context on which governance actors base their perceptions, decisions, and actions.

Several factors facilitate political change: (a) the expansion of communities of practice, (b) the inclusion of key policy makers or other critical individuals, (c) the acceptance of new knowledge and practices by government networks, and (d) the passing of a tipping point or cognitive threshold (Adler, 2005, 2008). Adler sometimes uses the rather fuzzy term “cognitive authority” to describe power but also follows the well-established definition of Barnett and Duvall (2005). They differentiate between compulsory, structural, institutional, and discursive power. This definition is convincing because it combines a resource- and process-based perspective as well as positivist and postpositivist dimensions.

Adler’s understanding of political change as the transformation of the context, beliefs, and values that shape reality is similar to triple-loop learning (Pahl-Wostl, 2009) or third-order change (Hall, 1993). Single-loop learning—or first-order change—is a simple shift of strategies. Double-loop learning—or second-order change—alters underlying assumptions, goals, and priorities but within structural constraints (Pahl-Wostl, 2009, p. 322). Pahl-Wostl connects triple-loop learning with informal networks to explain change in resource governance. Her inclusion of feedback loops and reflexivity represents an advantage over Adler’s approach. I follow her understanding that change has different orders, requires different stages of learning, and, therefore, can only be measured in a gradual, comprehensive way and not dichotomously. To assess the stage of loop learning, I draw on Pahl-Wostl’s typology of changes (e.g., regarding institutions, uncertainty, or governance mode). If Adler’s approach accurately captures the developments in India and/or South Africa, fostering trust and identity building along with collective learning processes could strongly benefit capacity building efforts. If they do not form by themselves, it might be useful to initiate communities of practice such as organizations like the World Bank already do (Adler, 2008). There are more than a hundred so-called Thematic Groups that are organized as communities of practice with the goal of promoting learning, best practice exchange, and innovation

within the World Bank. A small number of communities of practices with mixed membership, composed of World Bank employees, partner organizations, and external audiences, additionally enhance outreach and information dissemination.⁷

Differences and Similarities to Network Analysis

Generally, networks can be described as a set of ties between a set of actors that may change over time; network analysis is thus interested in relationships and structures (Wasserman & Faust, 2008). Since networks can be formal or informal, communities of practice could be understood as a certain type of informal network.

There are two broad groups of network analyses—formal or social network analysis and more descriptive approaches—that have been criticized for using networks as a “heuristic device” (Christopoulos, 2008). My reflections mainly target formal social network analysis. It primarily explains the relationships between actors and network developments through structural characteristics—at the level of ties between two actors, through group structure or positional measures. Social network analysis is interested in what happens *inside* the network and how this may explain the development of networks over time. Some descriptive approaches of network analysis have taken the whole network as an actor (independent variable) in order to analyze their impacts on policy (Kahler, 2009; Keck & Sikkink, 1998). In contrast to formal social network analysis, Adler’s communities of practice and cognitive evolution are more interested in how the communities induce and affect change processes *outside* the network.

Further characteristics that separate communities of practice and social network analysis are: (a) the “we feeling”/identity building, (b) a general sense of trust, and (c) the definition of power. Social network analysis targets questions of identity and trust as well, but—if not combined with other methods—analyses them from a rational-structural perspective of resource exchange and dependency (e.g., Compston, 2009). This conflicts somewhat with constructivist arguments, as it may (but does not have to) imply a competitive, even game-theoretical, situation within the network.

Trust in social network analysis is measured at the dyadic level between two actors and in some studies as an expression of general trust in colleagues or in an organization as a whole (Luo, 2005). Collective-level trust or the cultural elements of trust have not received enough attention in social network analysis (Adler & Kwon, 2002; Levin & Cross, 2004). The building of background knowledge that eventually spreads beyond communities of practice is a concept that seems to be hard to measure through quantitative-based network approaches.

Identity building in social network analysis is measured through tie strength and attribute-based measures such as homophily or closure/transitivity. Even though this could present a helpful addition to constructivist approaches (Hafner-Burton et al., 2009), shared attributes of actors or affiliations do not guarantee a common identity in political science terms. Hence, applications would have to be made with care.

Finally, social network analysis' understanding of power differs from Barnett & Duvall's understanding outlined above because it is related to structural positions *within* the network only (e.g., Burt, 1992). Although social network analysis and communities of practice overlap in terms of key individuals (who may or may not be in a central broker position), the application of a network-type approach to explain change *outside* of the network requires a more encompassing definition of power.

If the drivers of political change rather conform to more simple, resource exchange-based networks without group trust and identity building, then capacity building programs may want to focus more on providing the sought-after resources, for example, technology or funding. For the comparative assessment below, I use these basics (structures, relational measures, and resource exchanges) but do not provide a full quantitative formal social network analysis.

Method

This article uses a mixed-methods approach to measure change in India's and South Africa's domestic climate governance and to explore the actors—and their connections—behind the developments. Change will be assessed via the regulation density, the results of an expert survey, and qualitative answers from a number of semistructured interviews. In South Africa, 35 interviews were conducted between January 20 and March 13, 2010 and 30 interviews in India between October 8 and November 25, 2010. The expert judgments and the interviews also serve the identification of actors and their roles and connections. Results will be integrated in a concurrent triangulation in order to achieve higher validity (Creswell, 2008).

Expert judgments or surveys generate a consensus opinion on a phenomenon or problem otherwise hard to observe or analyze directly (Benoit & Wiesehomeier, 2009), such as the nature of change and collective learning processes here. The selection of experts—and their actual expertise and authoritative knowledge—is more important than the number of participants. Here, the number and quality of publications, activities, and reputation of experts served as benchmarks for the validity of the survey (Benoit & Wiesehomeier, 2009). These were assessed beforehand. In addition, a number of questions in the survey regarding the participant's years of experience in the field, major events in the respective country's climate policy developments, and their projected climate change impacts completed the evaluation of the level of expertise of each participant. Policy makers do not qualify as experts because they usually do not possess the same profound specialist knowledge the expert does. Experts advise policy makers in a professional manner, but they do not take political decisions themselves. In the interviews, a wider range of policy makers, companies, and NGOs were included.

The number of respondents in India (10 experts) and in South Africa (13 experts) surpassed the minimum number of five experts set in other expert surveys (Ray, 1999). Of the 13 experts in South Africa, 8 are academics (both social scientists and natural

scientists), 4 are consultants, and 1 has a legal background. The professional background of the Indian experts is similar: six are academics, three are experts from think tank-type NGOs, and one is a consultant. Anonymity has been agreed on with each interviewee.

For the purposes of this article,⁸ the following criteria guided country and case selection, approximating to a structured, focused comparison (George & Bennett, 2005):

1. Significant and rising emissions of greenhouse gases (cumulative and/or per capita).
2. Ratification of the UNFCCC and Kyoto Protocol, but no mandatory emission reductions yet.
3. Similar projections concerning the impacts of climate change and the high degree of overall vulnerability of the society.
4. Similar form of political system and administration.
5. A certain weight and activity in international climate negotiations. This should guarantee a minimum of interest in a political handling of climate change.

The difference in per capita GHG emission between India (low) and South Africa (high) does not impede a comparison as cumulative emissions are high in both countries.⁹

Despite the strong links between levels of climate governance, international climate negotiations and international peer pressures are treated as external constraints for the purposes of this article. India has been a traditional nay-sayer in the climate negotiations (Michaelowa & Michaelowa, 2011), and post-apartheid South Africa seeks to act as a “bridge-builder” (Atteridge, 2011). Apart from this, the number of publications stressing the North–South divide in the climate negotiations, its history, and implications is high. Thus, shifting domestic reasoning to the center provides a fresh perspective.

The time period of analysis is January 2007 to December 2010. The momentum of international climate governance and, therefore, potential change in domestic climate governance increased significantly from approximately 2006–2007 onwards. Analysis is restricted to the national level of governance and includes the big business sector only. The cases of this article, therefore, are India and South Africa and, more precisely, their national level of domestic climate governance between 2007 and 2010.

The Development of Domestic Climate Governance and the Scope of Change

Regulation Density and Other Governance Mechanisms

This section describes the main developments in India’s and South Africa’s domestic climate governance between 2007 and 2010 and assesses whether a change has taken

placed based on the regulation density. Knill, Schulze and Tosun (2010) split regulation density into the amount of policies over time and the amount of governmental instruments—such as taxation—over time. I neglect their second dimension of measurement for policy change, regulation intensity, because it relates to the severity and the impact of the regulations. This is hard to measure since it would require an up-to-date measurement of GHG emissions.

South Africa developed its first National Climate Change Strategy of 2004 (South Africa, 2004), but no concrete measures were implemented. The first national climate change conference in Midrand in 2005 led to the “Midrand Plan of Action,” which was largely a statement of intent. Actual political momentum only occurred from approximately 2007 onwards. In December 2007, the ruling party African National Congress (ANC) adopted a declaration on climate change for the first time (ANC, 2007). Although not a concrete policy step, this lifted climate change onto the ANC agenda and certainly raised awareness among ANC policy makers. In July 2008, the Long-Term Mitigation Scenario was published (*LTMS*, 2008). The *LTMS* is a scientific document that lays out different possible options for mitigating South Africa’s emissions. In November 2010, a Green Paper on South Africa’s national climate policy was published that became a White Paper in October 2011 (published as legislation in January 2012). It includes steps toward the development of a specific adaptation policy—a neglected side of national climate governance thus far.

Following its goal to conduct an environmental fiscal reform (South Africa Treasury, 2010), Treasury introduced a charge of 2 cent¹⁰/kwh on nonrenewable electricity in 2009, a small carbon tax on new vehicles in October 2010, and published a discussion paper for the introduction of a widespread carbon tax in December 2010.

These measures promise to lead toward the 34% emission reduction goal (compared to the “business-as-usual scenario” signed in the Copenhagen Accord) and to enhance adaptation. Also, nearly all government departments at the national level now have a climate change appointee or a climate change team. With respect to business, awareness and activities are picking up, but more in terms of mitigation than of adaptation (Vogel, 2009).

Some elements of energy governance are cobeneficial to climate change. They are often redeclared as part of South Africa’s climate change response. The Energy Efficiency Accord of 2005 is a voluntary public-private partnership that is cobeneficial to climate protection. The Demand-Side Management program of the parastatal electricity provider Eskom is another such measure. Finally, the introduction of a renewable energy feed in tariff (REFIT) serves climate governance goals as well, but difficulties in integrating South Africa’s energy and climate governance exist (Tyler, 2010).

With respect to private governance, large, transnational companies are responding to the Carbon Disclosure Project survey on companies’ GHG emissions and climate change activities. The response rate has been consistently high between 2007 and 2010 (Carbon Disclosure Project [CDP] Reports, n.d.). The National Business Initiative (NBI) promotes business action on climate change and has organized a series of workshops following the National Summit on Climate Change in 2009. Several companies

have started to engage in climate change projects or sponsor research chairs on climate change, for instance, the mining company Exxaro (Exxaro, 2010). The number of registered CDM projects has increased from 8 projects in 2007 to 18 projects at the end of 2010 (South Africa Department of Energy, 2011). The overall number of policies, strategies, and other governance initiatives has thus clearly increased between 2007 and 2010.

For the beginning of 2007, no comprehensive domestic Indian climate policy can be identified. The country could, however, draw on already existing energy efficiency and renewable energy policies. In October 2007, the Bureau of Energy Efficiency (BEE) published a paper discussing issues of energy security and climate change and how existing programs benefit adaptation to climate change (BEE, 2007). This article argues that 2% of India's GDP is already spent on measures and programs that are cobeneficial to climate governance. A reliable check of this figure was not possible.

In 2008, the Prime Minister's Council on Climate Change published the National Action Plan on Climate Change (NAPCC). It is composed of eight broad missions that include mitigation, adaptation, and research promotion. Each of these missions has been assigned to one or more ministries at the national level. They are responsible for the development of more specific measures and their implementation in each of the federal states. According to almost all interview partners, only the National Mission on Energy Efficiency and the Solar Mission have really taken off in terms of concrete planning, financial investments, and steps toward implementation at the subnational level. Both of these missions draw on existing policies and initiatives. The energy efficiency mission, for example, includes a star rating system for appliances and the Performance, Achieve, & Trade (PAT) Scheme, which is a market-based mechanism that enables the trading of energy-saving certificates among large industries. Both measures are based on the Energy Conservation Act of 2001. The other missions under the auspices of the NAPCC were in different stages of planning and finalization as of November 2010.

In 2009, the Ministry of Environment and Forests published a document outlining 20 initiatives that are cobeneficial to climate governance (MoEF, 2009). The Low-Carbon Expert Group, set up by the Planning Commission in 2010, is supposed to develop strategies and policy input for the transition to a low-carbon economy that feeds into the central government's 12th Five-Year Plan (2012-2017). The submission of a final report to the Planning Commission on this topic was expected for March 2011. The effective functioning of the CDM and the growing renewable energy business sector imply that India's approach is mainly a business-oriented one. The number of CDM projects has increased from 83 registered projects in 2007 to 650 projects in 2010¹¹—only China hosts more. Indian companies also report to the Carbon Disclosure Project but have significantly lower response rates, even though these increased from 2007 to 2010 (CDP Reports, n.d.).

Private governance initiatives exist as well. The two Chambers of Commerce—the Federation of Indian Chambers of Commerce and Industry (FICCI) and the Confederation of Indian Industries (CII)—both now have climate change task forces.

CII has set up a Green Business Center that promotes the development and exchange of best practices. Like their South African counterparts, several Indian companies have started projects and support research related to climate change. Overall, the regulation density in India increased between 2007 and 2010 as well.

Whereas South Africa already had a national climate strategy by 2007, India had more policies and strategies that turned out to be cobeneficial to start with. The regulation density thus seems to be slightly higher in India, but there is hardly any difference in terms of direct, comprehensive policies and instruments targeting climate change. The increase of the regulation density in both countries supports the assumption that a change has taken place between 2007 and 2010 and is still ongoing. But it does not tell us enough about the nature and degree of change, which is expected to differ.

Nature and Scope of Change: Results From Different Data Sources

The differentiation into orders of change and loop-learning, including the production of new background knowledge, requires a comprehensive assessment of climate governance developments in India and South Africa. This section integrates the findings of interviews and the expert survey that target awareness, knowledge, and learning as well as actors' roles, interests, and governance actions or practices.

Interviewees were asked whether something had changed in climate governance in the past 2 to 3 years and if so, to describe what it was. In South Africa, most saw an increase in awareness and a different perception of climate change as a challenge. They emphasized that climate change was not much of a topic before, either for government or business, that people did not talk or know about it or did not take seriously. Some identified a rift between knowledge and practice, and others highlighted the positive examples of action or said that people are at different points on the learning curve. The knowledge that actors have about climate change¹² (a basic understanding of the science and technology questions or a normative position) is not evenly distributed. Those experts and actors directly working on climate change have a good knowledge of the science and want to do something about climate change. Some governance actors outside of these circles—from government and administration and business—share this kind of knowledge as well, but not all. The understanding of mitigation issues is generally better than of adaptation. A member of government/administration states that “the level of consciousness of people at a key level has gone up and even ordinary people see the impacts now. . . . Awareness is picking up everywhere, but we're not at the required level yet.”¹³ Media attention to the topic was also said to have increased a lot from about 2007 onwards.

Members of government as well as scientists stressed that there is an increased need for scientific information and feasible solutions—both to help overcome uncertainty and to guide governance processes. The interviews as well as an analysis of policy documents and literature shows that there is a clear shift in awareness, perceptions, and potentially a general understanding of climate change related to new background knowledge among the central actors in government and business. This applies to parts

of the general public as well. Differences according to specific types of knowledge exist (Never, 2012). A parallel increase in debate among and actions by governance actors points toward a collective learning process. To some extent, these findings contradict existing analyses proclaiming a generally insufficient level of awareness and sparse media coverage (Hallding et al., 2011, p. 50).

The expert survey confirms the interview results. There was a nearly unanimous consensus among experts that (a) the general attitude toward climate change, (b) the self-understanding (role) of South Africa, (c) the definition of actors' interests relating to climate change questions, and (d) South Africa's position in international negotiations changed between 2007 and 2010. There was only one deviant opinion concerning the definition of actors' interest. The consensus of experts saw a change happening from about 2007 onwards, with acceleration in the run-up to the Copenhagen conference in December 2009. The publication of the Fourth Assessment Report of the IPCC, the ANC declaration in Polokwane, and the *LTMS* process counted as milestones for this process of change.

All but one expert on India also agreed that (a) a change is taking place concerning the general attitude toward climate change, and for (b) the definition of actors' interests and (c) India's self-understanding, 70% of experts saw a change and 30% did not. Concerning a change in India's position in international climate negotiations, ratings were evenly split between "yes" and "no." These results imply that only some actors changed their positions. It is not clear yet how deep the ongoing shift is and what areas of climate governance it affects. Most agreed that the change occurred from about 2008 onwards. Milestones in the development of India's climate governance included the NAPCC process and the Indian government's promise to reduce emission intensity, as well as some natural disasters and weather phenomena that increased awareness (e.g., floods and monsoon changes).

Several experts identified the appointment of Jairam Ramesh as Minister of the Environment and Forests in May 2009 as a turning point. Ramesh's replacement in July 2011 gave rise to the fear that the changes taken thus far were only "Ramesh-deep" (Michaelowa & Michaelowa, 2011) because his follower Jayanthi Natarajan counts as environmentally more conservative and less of a political heavyweight. Indeed, Natarajan reinforced the traditional Indian foreign policy position again at the international negotiations in Durban 2012, coming close to being a deal-breaker. Whether the Indian agreement to the Durban Platform for Enhanced Action (which may lead to binding mitigation targets for all parties post-2020) is indeed a step forward or a smart negotiation strategy that allows for postponement and realignment remains to be seen. The latter would be a step back.

Interview partners in India agreed that, generally, awareness and knowledge have increased in the past few years. Particularly the business angle to climate change is "really the buzz since 2007 and even stronger since 2009."¹⁴ Business has learnt that there are risks attached to climate change that they have to deal with in their company.¹⁵ As in South Africa, the knowledge about climate change in India was unevenly spread. The learning process was at different stages as well, depending on the actors,

their (business) interests, and—to a lesser extent—their location (national or state/local). There was a lack of knowledge on some issues, particularly adaptation. A lot of contestation was ongoing about whether, what, and how to do something about climate change, creating confusion. Those actors working closely on climate change have started to develop new background knowledge, but this is not shared across actor groups. No widely distributed, intersubjective background knowledge has yet come about.

Business associations and big business show signs of collective learning, at least partly. They learn individually within their own company as well as through their peers. The same applies to parts of central government. In general, the reformulation of strategies and policy papers as well as the ongoing shift in positions gives sufficient reason to believe that at least a single-loop learning process taking place. In some areas—such as energy efficiency, solar energy, and CDM—a double-loop learning process has occurred. This is supported by the higher regulation density in these fields. For cognitive evolution, this means that the cognitive threshold required for the widespread institutionalization of new background knowledge has not yet been passed.

For South Africa, the results indicate that a collective learning process has occurred for only some governance actors, but a desire for learning and orientation—and potentially new background knowledge—exists. The nature of change includes new knowledge, debates, and the challenging of underlying perceptions. First, altered actions are being taken. This implies at least a double-loop learning process, giving rise to new governance measures and thought processes across society. Whether a triple-loop learning process is taking place remains to be seen. It depends on the implementation of the measures under development.

In comparison, South Africa seems to be further along in the production of new background knowledge, but India is more successful in those parts of climate governance that serve business interests. In both countries, knowledge gaps are greater concerning adaptation to the impacts of climate change. Here, further capacity building is required.

The Driving Capacity of Specific Actor Groups

South Africa

Who drives the identified change and how are the actors related to each other? The point of departure for the analysis of both cases is the concept of communities of practice. The expert judgments targeted communities of practice only and did not ask questions that would produce data usable in a formal social network analysis. The semistructured interviews contained more open questions suitable for a qualitative identification of relevant actors.

The expert survey described the conceptual core features of communities of practice. Experts were then asked to choose one of three statements that most closely reflected the current situation in their country. The South African expert judgments

were almost evenly split between those identifying communities of practice but attribute a lack of power to them and those experts who see their number and power growing, with an influence on change processes (46% vs. 54%, respectively). Some experts who chose the former statement commented that, in spite of their choice, they nevertheless see a tendency toward a growth of communities of practice and their power.

The following interview questions targeted the identification of communities of practice and other networks: "Who are the most important actors in climate governance in your country? Who do you collaborate or exchange with on climate change questions and practices? Are these contacts personal and regular or not? How would you describe these exchanges? Do you feel that you are engaging for the same thing/are on the same page?" In addition, at the end of the interview, each interviewee was asked to recommend other key people in the field worth interviewing. Thus, the technique here approximated the interview and snowballing methods also used in social network analysis (Wasserman & Faust, 2008).

In South Africa, the number of actors working on climate change issues at the national level is rather limited. The data obtained made clear that the number of key actors actually pushing for climate governance at the national level amounts to around 15 to 25 people only. The data strongly supported the existence of communities of practice bound by trust and a group identity and enabled their identification. There are (at least) three communities of practice and many members having links to the transnational and international levels. These links may have the form of resource exchange-based networks or communities of practice.

Communities of practice revolve around the Department of Environmental Affairs and—to a lesser extent—the Department of Science and Technology. Another community of practice involves the Department of Energy and the two major greenhouse gas-emitting companies, Eskom and Sasol. The academics (both natural and social scientists) form an epistemic community as a specific type of community of practice. They split into different communities of practice when it comes to their interactions outside of the purely scientific realm. Some are members of South Africa's delegation at the international negotiations and some form a part of the transnational epistemic community IPCC, thus connecting domestic and global governance.

The Council for Scientific and Industrial Research (CSIR) has a significant input into the Department of Environmental Affairs climate change team and works closely with the Department of Science and Technology as well. Two of the CSIR researchers have been repeatedly cited as key people in the interviews and one of them belongs to the transnational community of the IPCC. The climatological knowledge exchange—and development of measures based on it—is complemented by the input of researchers from the University of Cape Town (UCT), most notably a scientist of the Climate Systems Analysis Group, who take part in the IPCC as well. Another research group of the UCT, the Energy Research Center, works on energy and climate questions and tries to present different mechanisms to the Department of Energy. Along with a member of the nongovernmental organization, SouthSouthNorth, an Energy Research Center researcher mainly drove the *LTMS* process. Thus, they build another community

of practice along with the DoE and researchers from the South African Energy Research Institute (SANERI).

Here, the institutional power of communities of practice shows: The *LTMS*, containing the communities' knowledge and ideas for practices, has been widely adopted and is often used as a reference by governance actors. The *LTMS* suggestion to commit to a peak, plateau, and decline plan in terms of GHG emissions is the South African pledge in the Copenhagen accord. Implementation remains to be done, but substantial changes in the regulatory framework are underway. Following Pahl-Wostl's (2009) characterization of loop learning, this indicates either double- or triple-loop learning.

The community of practice around the DEA also contains scientists who are more concerned with adaptation to the impacts of climate change—these are, primarily, one researcher at the South African National Biodiversity Institute (SANBI) and, in terms of risk management strategies, a researcher at the University of Witwatersrand.

Within the Department of Environmental Affairs, the number of staff working on climate change is fairly small. Relationships among team members and between team members and advising scientists were repeatedly described as “very personal,” “friendly,” or “close,”¹⁶ thus pointing toward relationships of trust and even toward a “we feeling.” One interviewee from the Department of Environmental Affairs described the climate governance landscape in South Africa as being driven by a small circle that functions “almost like a closed club.”¹⁷ These results clearly point toward the constructivist concept of communities of practice, rather than simple, resource exchange networks. There are two key individuals within the Department of Environmental Affairs who take part in international climate negotiations and who drive the domestic policy processes as well, thereby connecting different levels of action. Marthinus van Schalkwyk, former minister of the environment, was repeatedly cited as a key figure for lifting climate change onto the government's agenda.

Already in 2004 van Schalkwyk stressed that “we are dealing with not only an environmental issue; it [climate change] is centrally an economic, social and sustainable development issue as well.”¹⁸ It took several more years for this understanding to be accepted and internalized by other actors. Differences in views have largely shifted to more detailed aspects on how to deal with these challenges, instead of ignoring or dismissing climate protection as unimportant. This implies that, first, critical individuals are important for the influence of communities of practice. Second, the team surrounding van Schalkwyk—the community of practice in and around the Department of Environmental Affairs—has exerted enough productive power over time to establish this understanding in the public discourse. Generally, however, the Department of Environmental Affairs counts as a department with limited power compared to other ministries (thus confirming Koch et al., 2007). In turn, this also limits the power of the community of practice.

In terms of environmental NGOs, the community of practice around the Department of Environmental Affairs has its most influential members within a transnational organization, the WWF, and, to a lesser extent, among the individuals of Earthlife Africa and the Climate Action Partnership. Whether the latter belong to the core of the

community of practice is difficult to tell since the exact knowledge and learning processes are impossible to trace (without extensive participant observation). The final members of this community of practice are two key individuals of the NBI. Several of the companies interviewed indicated a community of practice-type link with international peers in business associations: They exchange knowledge and best practices, learn together, and stimulate each other to take action.¹⁹ These transnational communities of practice overlap somewhat with domestic ones in the private sector.

The third community of practice entails the closely collaborating climate change teams of Eskom and Sasol. A formal community of practice may come about in the future.²⁰ Both companies, especially Eskom, are not particularly homogeneous entities. Therefore, it is not clear which company units entertain ties with the Department of Energy. Some individuals and units in the companies and the Department of Energy advocate *against* climate protection—or for nuclear energy. The climate change teams and other parts of the Department of Energy favor renewable energy, mitigation, and adaptation. Various interviewees emphasized that Eskom and Sasol are very close to the Department of Energy, indicating a community of practice-type link in any case. Generally, Eskom, Sasol, and the Department of Energy have a strong influence on the energy components of climate governance. Eskom and Sasol are also members of the NBI.

For communities of practice, institutional power means that they spread their knowledge and influence decision making and actions beyond their direct area of influence, that is, into other ministries, companies, and, finally, society's background knowledge as a whole. The establishment of a climate change team within each ministry could be a result of the institutional power of the communities of practice, but data here are unclear.

The leading policy processes, such as Green and White Papers, give indications both for and against the power of the identified communities of practice. On one hand, the communities of practice were successful in initiating the policy processes as well as establishing climate change and a basic understanding of it in relevant policy makers' and private actors' minds. Contrary to what Hallding et al. (2011) find, my data suggest that no actor at key level seriously doubts anymore that South Africa has to do something about climate change now. On the other hand, the repeated postponement of the Green and White Papers' publication reflect the insufficient power of communities of practice in pushing their knowledge and ideas through more quickly. Moreover, the collaboration between government departments is insufficient, leading to a lack of coherent policy. In particular, the Department of Environmental Affairs and the Department of Energy could improve their collaborative efforts. A stronger collaboration would show in the structure and membership in (the same) communities of practice.

The productive power of communities of practice in terms of shaping the debate within governmental circles is higher than in overall society, as particularly scientists and members of the Department of Environmental Affairs contribute to a certain framing of the debate. This framing revolves a lot around energy and mitigation issues and coins climate change as an economic and political problem South Africa needs to deal

with actively. The debate in society is additionally shaped by the media and the groups of civil society that they give room—notably, some NGOs and some vocal climate sceptics.²¹ Results of the interviews and documents here are preliminary and would require a full discourse analysis.

Generally, the communities of practice identified succeeded in anchoring climate change as a factor to be dealt with in major governance actors' strategies and decision making, even if it is only in a discursive way as a first step. A detailed analysis of the knowledge and practices generated within these communities and their tracing goes beyond the scope of this article. Yet this description of the driving actor communities underlines the importance of power (and the lack of it) and of key figures within communities of practice. Actor networks are indeed bound by trust, have begun to form an identity and exchange knowledge, ideas, and practices. In sum, the concept of communities of practice is well suited to capture the actor relations and their relevance for South Africa's changing climate governance.

India

Compared to South Africa, the number of actors operating at the national level is much higher in India. However, relationships between actors and their positions are not as clear-cut. Interview partners also highlighted that there is strong disagreement between actors and actors groups on what to do and how in climate governance. This relates to a fragmentation of the science landscape and, to a certain extent, a fragmentation of civil society. The number of scientists working on climate change is high—so is the number of approaches advanced to deal with climate change. They reflect the diversity of disciplines but also differ in quality and sometimes normative background of the solutions presented.²² Competition is deemed high.

Although most interviewees affirmed the existence of some sort of networks between governance actors, these are not just a handful of small, clearly identifiable circles, as in South Africa. The formation of actor constellations, networks, and, potentially, communities of practice, seems to be still very much in flux. One expert described the situation as “confusing,”²³ and another summarized it this way:

*In the next few years we'll see what the actor networks really are that put policies into place, push for stuff to happen, it's so much under development still, I wouldn't be able to tell at the moment.*²⁴

Yet several interview participants from civil society and with academic/expert backgrounds stated that if they or other researchers have influence on government and governance processes, it is only because of informal, trust-based relationships or in an ad hoc way. This confirms the conceptual point of departure of both a network and a community of practice approach.

In the expert survey, two thirds of experts (70%) chose the second statement confirming the existence of communities of practice and attesting to their insufficient

power and one third of experts (30%) saw an increase in both the existence and the power of communities of practice in India. Compared to the results for South Africa, a lack of power seems even more relevant for potential communities of practice. Let us look now at the information retrieved from the interviews in more detail.

First, the change in staff at the Ministry of Environment and Forests decreased the influence of a group of bureaucrats and ex-bureaucrats of various departments who dominated Indian climate policy for many years. Key figures here were the environmental foreign policy makers Nitin Desai, Prodipto Ghosh, C. Dasgupta, and the former international chief negotiator, Shyam Saran. Also, the influence of The Energy and Resources Institute (TERI) used to be stronger (Biermann, 2002). Desai and Dasgupta are now fellows at TERI, and Ghosh is now head of the climate change team of FICCI. It can be assumed that they built a community of practice before the shift, but, as noted, that time period before 2007 is not the focus of this study.

The Prime Minister's Council on Climate Change, set up in 2008, has been important for the draft of the NAPCC but lost some of its importance soon after its publication. The concrete inputs of individuals in the NAPCC remain unclear. "The NAPCC has emerged from a curtain of political secrecy," quotes Rajamani, the consultant, and journalist Rahul Goswami (Rajamani, 2009, p. 356). It is only in the process of allocating the missions of the NAPCC to governmental departments and agencies that power struggles became more openly visible. The Ministry of Power and the BEE, for instance, struggled over the Energy Efficiency mission, which was finally allocated to the BEE. Some interview partners said they were not sure whether the PM council still really exists, and others spoke of a devaluation of its role or even a disconnect from actual climate governance processes. This was attributed to the strong role of Ramesh and his new team of advisers and the establishment of the Low-Carbon Expert Group.

Whether the Low-Carbon Expert Group can count as a community of practice is unclear—it may be true for parts of the group, but a "we feeling" or identity building for the whole group of 26 experts is uncertain. Trust seems to exist more at the dyadic level and within subgroups. Members identified a like-mindedness in the group, meaning a climate change perspective on even economic or technical aspects.²⁵ The group split up into different teams targeting specific questions and chapters for the report to the Planning Commission. A higher degree of agreement exists among these teams, but the chapters at the draft stage reflected very different ideas because each team had its own opinions and strategies.

The fragmentation of the scientific community in India leads to the question of whether there is one or more epistemic communities or whether there are other communities of practice that include scientists or not. Given that there are more than 120 institutions concerned with research on climate change (India DST, 2010), an exhaustive answer to this question cannot be given here. The INCCA consists of about 220 scientists working on different kinds of analyses of climate change. However, the National Communication Process has simply been renamed to INCCA (India DST, 2010, p. 5). This is too large to count as a community of practice. It is a simple network, at least for the time being. Various institutes and universities cooperate, such as

the different Indian Institutes of Technology and the Centre for Policy Research. The exact number and constitution of these networks across the scientific landscape—as well as their qualification as epistemic communities—could not be determined. The influence of scientists on government is often informal and ad hoc and depends on individual people. Moreover, the influence of particular scientists may change with those in power.²⁶ In other policy fields, such as economics, research has a lot more influence on government and policy, and relationships between scientists and government and bureaucracy are much stronger.²⁷

Many leading experts, bureaucrats, or NGO members working on climate change issues have at one point in their professional life worked at TERI. This shows the standing that the institute has, or at least used to have, in the field. On one hand, TERI is close to business and business interests because it does a lot of consultancy work for them. On the other hand, TERI's influence on climate governance seems to have diminished in recent years.²⁸ Ramesh and Rajendra Pachauri, directors of TERI and the IPCC, respectively, are reported to have had their differences over the NAPCC prior to the Copenhagen summit, followed by a serious fall-out about the IPCC and Indian reports on the melting of the Indian Himalayan glaciers in January 2010. It led to a cease of communication between them. The influence of Pachauri and TERI on India's domestic climate policy considerably weakened after this.²⁹

Various interview partners stressed the importance of Ramesh and his team of younger assistants for the policy process—access to these circles was not possible. Hence, no closer analysis whether and what kind of community of practice surrounds him is possible. In any case, Ramesh qualifies as a key individual. Katharina Michaelowa and Axel Michaelowa (2011) argue that he broadened the camp of “progressive internationalists” (Dubash, 2009) that he himself belongs to. They ascribe the rise in media attention and the stimulation of the domestic public debate partly to the international climate conference in Copenhagen, but largely to Ramesh and his good relationships with the journalists (Michaelowa & Michaelowa, 2011, p. 17). Since their analysis is convincing, Ramesh and his team were thus likely to have a particular discursive power.

Concerning civil society, there is a community of practice between individuals of the WWF and the Ministry of Environment and Forests (MoEF) and individuals of the Center of Science and Environment (CSE) and the MoEF and potentially another one between the CSE and the Ministry of New and Renewable Energy. For the latter, data could not be verified from both sides. The CSE has been influential in the past (Stevenson, 2011), which is likely to make their access to the circles of power easier than for other NGOs. Although the CSE has opposed domestic climate action in the past,³⁰ at least some CSE members changed their view now. According to some sources, Ramesh is even called “NGO Minister” by business because he listens more to civil society than the previous minister did.³¹

Almost all interview partners identified the greater influence of big business on climate governance, but the means of influence are not clearly discernible. This is partly due to the way lobbying is perceived in India. Several interview partners said

that lobbying as a concept does not exist openly the way it does in Europe because it has a negative image in India. Both CII and FICCI deny that they are lobbyist organizations—the president of CII said, “We are not lobbyists, we are advocates” (Khandelwal, 2010).

Other governance fields such as industry or economic governance are of higher interest to big corporate groups such as the Tata Group and Reliance. Relationships between Tata, Reliance, and the central government are said to be very close, even though hard evidence on their relationships is not available. There are networks and potentially different communities of practice between proclimate parts of CII, FICCI, single leading companies, and the MoEF, including support for voluntary commitments under the CDM/Kyoto Protocol. There are also networks of those advocating for the opposite—the protection of economic growth interests under all circumstances. Members of the CII, FICCI, single companies, and individuals at the Ministry of Industry and at the Ministry of Power also form a network and could form another community of practice. Ghosh, the head of the climate change task force of FICCI, stands more for the old course of Indian climate policy—reflected in his former position in the Indian climate negotiations team. Networks between wind energy companies, such as Suzlon, and the Ministry of Renewable Energy exist, but whether these form communities of practice is unclear. The exact size of membership of these networks in terms of individuals and whether they qualify as communities of practice could not be determined as data on the relationships remained fuzzy.

Content analysis of the interviews indicates more relationships based on resource exchange-based networks in the business sector than on identity-building communities based on group- and dyadic-level trust. Market orientations and cobeneficial thinking prevails, which is in line with Stevenson’s findings. She argues that the overwhelming acceptance and engagement in the CDM was due to a shift in Indian foreign and economic policy toward more global market orientation and normative congruence building (Stevenson, 2011).

Generally, business has a stronger driving force than science in Indian domestic climate governance. Despite the existence of and the large amount of activities by environmental civil society at the national level, they do not have significant influence on governance. Moreover, the insights gained here confirm previous research identifying the groups of growth-first stonewallers, progressive realists, and progressive internationalists (Dubash, 2009; Rajamani, 2009). Although they are certainly ideal types, these positions were not significantly reflected in the descriptions of India’s climate governance landscape. Most interview partners belonged to the second or third group, in favour of India doing its share in climate protection. This supports the notion of an ongoing shift toward a normative commitment to climate protection, at least domestically, till the end of the observation period (12/2010).

Conclusion

This article compared the development and the nature of change in the domestic climate governance of India and South Africa as well as the actors responsible for these

developments. Although the focus was primarily empirical, the explanatory potential of the communities of practice concept compared to more simple, resource exchange–based networks of (formal) social network analysis were tested.

In both countries, a change in domestic climate governance at the national level took place between 2007 and 2010. It is still ongoing. The regulation density has increased in both countries, with India a step ahead in terms of regulation in energy efficiency and renewable energy. This is largely due to a longer Indian policy tradition in these fields than in South Africa and a significantly higher interest of the private sector—mostly to reduce electricity costs and to benefit from international market opportunities. For India, the results indicate the existence of at least single-loop learning or a simple shift in strategies, and in some areas double-loop learning—the change of underlying assumptions within structural constraints. The appointment of Ramesh as Minister of Rural Development in July 2011 could slow down the change processes, given his importance as a driver of India's domestic actions.

In South Africa, at least double-loop learning has occurred, with the potential for transformative triple-loop learning, but a final assessment depends on the implementation of governance measures. Implementation remains a challenge in both countries. Although awareness-raising programs and the closure of knowledge gaps continue to be useful here, the challenge of enforcing policies in either country is not specific to climate governance.

The analysis of actors driving these developments has shown that there are (at least) three communities of practice in South Africa, with a strong input from science, whereas the evidence for communities of practice in India is unclear. Here, more resource exchange–oriented networks exist that could more closely fit a social network analysis understanding, with a stronger influence of business on climate governance. Key individuals from government who have (a) a certain understanding of climate change, and (b) a positive normative attitude toward climate governance have been important in both cases. The adherence of such key individuals to a community of practice seems decisive for its formation and the success of cognitive evolution.

A comparison of two cases only does not suffice to conclude that communities of practice, trust, and identity building necessarily lead to a higher-order change, and hence, more effective climate governance. Still, some conceptual and practical implications result from the differences between India and South Africa.

A limited number of actors, such as the club-like structure of the climate governance landscape in South Africa, seem to be conducive to the formation of communities of practice and collective learning. Promoting trust and identity building between stakeholders may prove particularly useful if the number of stakeholder is limited, such as in subnational entities or in a specific sector. Incentivizing the building of communities of practice to connect bottom-up adaptation initiatives with individual companies or parts of government/administration could also be fruitful.

The difference in science's influence on governance shapes the nature of change in India and South Africa in a significant way as well. Scientists' influence is higher in South Africa due to their more concerted voice. The fragmentation of the scientific landscape in India and the high degree of competition limits their influence on

government. This is an important element explaining the difference in loop learning between the countries. For India's policy makers, strengthening ongoing efforts under the knowledge mission of the NAPCC is recommended. In addition, the creation of a permanent, interdisciplinary institution centralizing existing climate change competence in India is an idea worth considering, as suggested by my interview partners. Here, the Low-Carbon Expert Group presents a good start.

To what extent a historical affinity of government toward networks and deliberative solutions (as in post-apartheid South Africa) or long-standing, rather inert bureaucratic structures (as in India) are responsible for the differences between the cases is an interesting question for another study.³² The explanatory power of these different factors needs to be explored in more cases and in more depth before the formulation of theory-improving hypotheses is useful. Conceptually, a community of practice-type approach seems more suitable for explaining the impact of certain actor constellations—and the development of collective learning processes that leads to far-reaching change—than formal network analysis, interested only in structures, does.

Acknowledgment

The author thanks Sumit Ganguly, Bert Hoffmann, and Miriam Prys for their comments on earlier drafts of this article.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The German Academic Exchange Service (DAAD) provided funding for the author's research stay in South Africa.

Notes

1. UNDP, *Human Development Report 2010*. Retrieved from <http://hdr.undp.org/en/reports/global/hdr2010/>
2. International Monetary Fund, *World Economic Outlook 2011*. Retrieved from <http://www.imf.org/external/pubs/ft/weo/2011/01/index.htm>
3. World Bank. Retrieved from http://data.worldbank.org/about/country-classifications/country-and-lending-groups#Lower_middle_income
4. Government of India, Planning Commission, 2006. Integrated Energy Policy, Report of the Expert Committee.
5. International Energy Agency, statistics by country for 2009. Retrieved from http://www.iea.org/stats/electricitydata.asp?COUNTRY_CODE=IN
6. Government of India, Ministry of Environment and Forests 2009, India's GHG Emissions Profile: Results of Five Climate Modelling Studies.
7. World Bank. Retrieved from http://siteresources.worldbank.org/WBI/Resources/CoP_QA.pdf

8. Case selection was part of a larger project; India/South Africa was one resulting pair.
9. See Netherlands Environmental Agency. Retrieved from <http://www.pbl.nl/en/dossiers/climatechange/faqs#vraag9>
10. One South African cent is approximately 0.1 Euro cent.
11. UNFCCC. Retrieved from <http://cdm.unfccc.int/Statistics/Registration/NumOfRegisteredProjByHostPartiesPieChart.html>
12. The results on knowledge and awareness are based on both experts' assessment of other governance actors' knowledge and an interpretation of experts' own knowledge by the author.
13. Interview with Government/Administration 1—January 27, 2010, Pretoria.
14. Interview with NGO 3, October 18, 2010, Delhi.
15. Interview with Business 2, October 12, 2010, Delhi.
16. Interviews with Government 3, February 15, 2010, Pretoria; Expert 3, March 2, 2010, Cape Town; Expert 5, January 20, 2010, Johannesburg.
17. Interview with Government 3.
18. Statement by the office of Marthinus van Schalkwyk. Minister of Environmental Affairs and Tourism: *Van Schalkwyk urges global partnerships and local action on climate change*, December 15, 2004, Pretoria.
19. Interviews with, for example, Business 4, February 3, 2010, Pretoria; Business 6, March 3, 2010, Cape Town; Business 7, March 4, 2010, Cape Town.
20. Interview with Business 3, February 5, 2010, Johannesburg.
21. Interviews with Business 4, February 3, 2010, Pretoria; Government 5, March 2, 2010; observation of print media such as *Mail* and *Guardian* and *Engineering News* over various years. No methodological content analysis of the media was undertaken.
22. Interview with Academic/Expert 10, November 24, 2010; Academic/Expert 11, November 25, 2010, Mumbai.
23. Interview with Academic/Expert 9, November 19, 2010, Mumbai.
24. Interview with NGO 1, October 13, 2010, Delhi.
25. For example, interview with Academic/Expert 3, October 28, 2010, Delhi.
26. Interview with Academic/Expert 10, November 24, 2010, Mumbai.
27. Ibid.
28. Interview with NGO 3, October 18, 2010, Delhi.
29. Interview with Embassy 1, November 5, 2010, Delhi.
30. I am grateful to an anonymous reviewer of this article for this point.
31. Interview with Embassy 1, November 5, 2010, Delhi.
32. I am grateful to an anonymous reviewer of this article for this point.

References

- Adger, W. N., Arnell, N. W., & Tompkins, E. (2005). Successful adaptation to climate change across scales. *Global Environmental Change*, 15(2), 77-86.
- Adler, E. (2005). *Communitarian international relations: The epistemic foundations of international relations*. London: Routledge.

- Adler, E. (2008). The spread of security communities: Communities of practice, self-restraint and NATO's post-Cold War transformation. *European Journal of International Relations*, 14(2), 195-230.
- Adler, P., & Kwon, S. (2002). Social capital: Prospects for a new concept. *The Academy of Management Review*, 27(1), 17-40.
- Akoon, I., Archer, E., Colvin, C., Davis, C., Diedericks, G. & Maherry, A. (2010). *South African risk and vulnerability atlas*. Retrieved from <http://www.rvatlas.org/>
- Armitage, D. (2008). Governance and the commons in a multi-level world. *International Journal of the Commons*, 2(1), 7-32.
- Ascher, W., Steelman, T., & Healy, R. (2010). *Knowledge and environmental policy: Re-imagining the boundaries of science and politics*. Cambridge, MA: MIT Press.
- Atteridge, A. (2011). *Multiple identities: Behind South Africa's approach to climate diplomacy*. Stockholm, Sweden: Stockholm Environment Institute.
- Benecke, G. (2009). Varieties of carbon governance: Taking stock of the local carbon market in India. *Journal of Environment and Development*, 18(4), 346-370.
- Benoit, K., & Wiesehomeier, N. (2009). Expert judgements. In S. Pickel (Ed.), *Methoden der vergleichenden Politik- und Sozialwissenschaft: Neue Entwicklungen und Anwendungen* [Methods of the comparative political and social sciences: New developments and applications] (pp. 497-516), Wiesbaden, Germany: VS Verl. für Sozialwiss.
- Biermann, F. (2002). Institutions for scientific advice: Global environmental assessments and their influence in developing countries. *Global Governance*, 8, 195-219.
- Broadbent, J. (2010). Science and climate change policy making: A comparative network perspective. In A. Sumi, K. Fukushi, & A. Hiramatsu (Eds.), *Adaptation and mitigation strategies* (pp. 187-214). New York, NY: Springer.
- Burt, R. (1992). *Structural holes*. Cambridge, MA: Harvard University Press.
- CDP Reports—various years. (n.d.). *Carbon Disclosure Project reports, South Africa JSE 100; India 200*. Retrieved from <https://www.cdproject.net/en-US/Results/Pages/reports.aspx>
- Christopoulos, D. (2008). The governance of networks: Heuristic or formal analysis? A reply to Rachel Parker. *Political Studies*, 56, 475-481.
- Compston, H. (2009). Networks, resources, political strategy and climate policy. *Environmental Politics*, 18(5), 727-746.
- Creswell, J. (2008). Methodological issues in conducting mixed methods research designs. In M. Bergman (Ed.), *Advances in mixed methods research* (pp. 66-84). London: SAGE.
- Department of Environmental Affairs. (2011). *South Africa's second national communication under the United Nations Framework Convention on Climate Change*. Pretoria, South Africa: Author.
- Dubash, N. (2009). *Toward a progressive Indian and global climate politics* (Working Paper 2009/1). Delhi, India: Center for Policy Research, Climate Initiative.
- Exxaro. (2010): *Exxaro integrated annual report 2010*. Retrieved from http://financialresults.co.za/2011/exxaro_ar2010/yur-stakeholder-engagement02.html
- Folke, C., Hahn, T., Olsson, P. & Norberg, J. (2005). Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources*, 30, 441-473.
- George, A., & Bennett, A. (2005). *Case studies and theory development in the social sciences*. Cambridge, MA: MIT Press.

- Goldblatt, M. (2010). Comparison of emission trading and carbon taxation in South Africa. *Climate Policy, 10*, 511-526.
- Hafner-Burton, E., Kahler, M., & Montgomery, A. (2009). Network analysis for international relations. *International Organization, 63*, 559-592.
- Hall, P. (1993). Policy paradigms, social learning and the state. *Comparative Politics, 25*(3), 275-296.
- Hallding, K., Olsson, M., Atteridge, A., Vihma, A., Carsson, M. & Román, M. (2011). *Together alone: BASIC countries and the climate change conundrum*. Copenhagen, Denmark: Norden Nordic Council of Ministers.
- India DST. (2010, July). *National mission on strategic knowledge for climate change* (Mission Document). Delhi, India: Department of Science and Technology.
- Indian Network of Climate Change Assessment. (2010, November). *Climate change and India: A 4x4 assessment. A sectoral and regional analysis for 2030s*. Delhi, India: Ministry of Environment and Forests.
- IPCC. (2007). *Fourth assessment report: Climate change 2007 (AR4)*. Geneva, Switzerland: Author.
- Kahler, M. (Ed.). (2009). *Networked politics: Agency, power and governance*. Ithaca, NY: Cornell University Press.
- Keck, M., & Sikkink, K. (1998). *Activists beyond borders: Advocacy networks in international politics*. Ithaca, NY: Cornell University Press.
- Khandelwal, P. (2010). *Business of lobbying*. Retrieved from <http://www.indianexpress.com/news/business-of-lobbying/720798/0>
- Knill, C., Schulze, K., & Tosun, J. (2010). Politikwandel und seine Messung in der vergleichenden Staatstätigkeitsforschung: Konzeptionelle Probleme und mögliche Alternativen [Political change and its measurement in comparative policy research: Conceptual problems and possible alternatives]. *PVS, 51*, 409-432.
- Koch, I., Vogel, C., & Patel, Z. (2007). Institutional dynamics and climate change adaptation in South Africa. *Mitigation and Adaptation Strategies for Global Change, 12*, 1323-1339.
- Levin, D., & Cross, R. (2004). The strength of weak ties you can trust: The mediating role of trust in knowledge transfer. *Management Science, 50*(11), 1477-1490.
- Long-term mitigation scenarios*. (2008). Pretoria, South Africa: Department of Environmental Affairs.
- Luo, J. (2005). Particularistic trust and general trust: A network analysis in Chinese organizations. *Management and Organization Review, 1*(3), 437-458.
- Michaelowa, K., & Michaelowa, A. (2011). *India in the international climate negotiations: From traditional nay-sayer to dynamic broker* (CIS Working Paper Nr. 70). Zurich, Switzerland: The Center for Comparative and International Studies.
- Never, B. (2012). Collective learning through climate knowledge systems: The case of South Africa. *Politikon: South African Journal of Political Studies, 39*(2), 231-256.
- Olsson, P., Gunderson, L., Carpenter, S., Ryan, P., Lebel, L. & Holling, C. S. (2006). Shooting the rapids: Navigating transitions to adaptive governance of social-ecological systems. *Ecology and Society, 11*(1), 18.
- Pahl-Wostl, C. (2009). A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Global Environmental Change, 19*, 354-365.

- Rajamani, L. (2009). India and Climate Change: What India wants, needs, and needs to do. *India Review*, 8(3), 340-374.
- Rajan, M. G. (1997). *Global environmental politics: India and the North-South politics of global environmental issues*. Delhi, India: Oxford University Press.
- Ray, L. (1999). Measuring party orientation towards European integration: Results from an expert survey. *European Journal of Political Research*, 36, 283-306.
- Roberts, D. (2010). Prioritizing climate change adaptation and local level resilience in Durban, South Africa. *Environment and Urbanization*, 22, 397-413.
- South Africa Department of Energy. (2011, January). *South Africa's CDM Project Portfolio* (Up to January 2011). Retrieved from <http://www.energy.gov.za/files/esources/kyoto/South%20Africa%27s%20CDM%20project%20portfolio%20up%20to%2028%20January%202011.pdf>; 04 May 2011
- South Africa Treasury. (2010, March). *National treasury strategic plan (Update) 2010/13*. Retrieved from <http://www.treasury.gov.za/publications/strategic%20plan/Strat%20Plan%202010-2013.pdf>
- Stevenson, H. (2011). India and the international norms of climate governance: A constructivist analysis of normative congruence building. *Review of International Studies*, 37, 997-1019.
- Tyler, E. (2010). Aligning South African energy and climate change mitigation policy. *Climate Policy*, 10, 575-588.
- Vihma, A. (2011). India and the global climate governance: Between principles and pragmatism. *Journal of Environment & Development*, 20(1), 69-94.
- Vogel, C. (2009). Business and climate change: Initial explorations in South Africa. *Climate and Development*, 1, 82-97.
- Wasserman, S., & Faust, K. (2008). *Social network analysis. Methods and applications* (17th reprinted ed.). Cambridge, UK: Cambridge University Press.
- Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge, UK: Cambridge University Press.

Bio

Babette Never is a political scientist and doctoral candidate at the Hamburg International Graduate School for the Study of Regional Powers. The school is situated at the GIGA and the University of Hamburg.